

BIODATA

Name: Dr. Rachna Bhateria

Designation: Professor

Department: Department of Environmental Science, M.D. University, Rohtak-124001

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Area of Specialization- Bioremediation, Nanotechnology based remediation

I. Educational Qualification

Degree	Year of Passing	University/Institute
Ph.D	2012	M.D. University, Rohtak
M.Sc (Environmental Sciences)	2006	Guru Jambheshwar University of Science and Technology, Hisar
M.Tech (Environmental Engineering)	2008	Guru Jambheshwar University of Science and Technology, Hisar
B.Sc (Medical)	2004	M.D.University, Rohtak
Others P.G.Diploma in Environmental Law	2009	National Law School of Indian University, Bangalore

II. Projects Undertaken

Title of the Project	Duration	Letter no.	Funding Agency
Bioremediation of Chromium(VI) from Electroplating effluent using bacterial strains	2 Years	F.No. 39-967/2010 (SR) dated 12/01/2011	UGC, New Delhi (Feb, 2011 – Feb, 2013)
Impact of metal oxide nanoparticles on seed germination and seedling growth of <i>vigna radiata</i>	1 Year	DSW/2022/81 dated 25/01/2022 R K Foundation Fund	DSW, M.D.U., Rohtak

III. Publications:

a. Published in Refereed/Peer reviewed Journals

1. Mittal R., Shyamalee P., Sharma, A., **Bhateria, R.**, Kumar, B.A., Kashyap, R., & Bhukal, S. (2025) Surface modified novel synthesis of *Spirulina* assisted mesoporous TiO₂ @CTAB nanocomposite employed for efficient removal of chromium (VI) in wastewater, Applied Surface Science, 679, 161309
2. Panghal, V., Singh, A., Hooda, V., **Bhateria, R.** & Kumar, S. (2025) Recent progress, challenges, and future prospects in constructed wetlands employing biochar as a substrate: A comprehensive review. Environmental Science and Pollution Research. 100472
3. Singh R., Gupta, R., Bansal, D., **Bhateria, R.**, & Sharma, M. (2024) A Review on Recent Trends and Future Developments in Electrochemical Sensing, ACS Omega, 9, 7336-7356.
4. Bhatia, A., Sonika, Rajni and **Bhateria, R.** (2023) Effect of synthesized ironoxide nanoparticles on Mungbean and Okra seed germination, Annals of Agri-Bio Research, 28(2): 215-223. ISSN No. 0971-

- 9660 link- <https://agribiop.com/effect-of-synthesized-iron-oxide-nanoparticles-on-mungbean-and-okra-seed-germination/>
5. Kumar, S., **Bhateria, R.** & Sunder Arya (2023) Assessing the Environmental Impact of Heavy metal contamination in water, sediments and aquatic vegetation of River Yamuna in Delhi. *Indian Journal of Science and Technology*, 16(44): 4090-4097. Online ISSN: 0974-5645 Print ISSN: 0974-6846 link- https://www.researchgate.net/publication/376068141_Assessing_the_Environmental_Impact_of_Heavy_Metal_Contamination_in_Water_Sediments_and_Aquatic_Vegetation_of_River_Yamuna_in_Delhi
 6. Sharma, Y. & **R. Bhateria** (2023) Synthesis of *Datura Innoxia*-added iron nanoparticles adsorbent for malachite green dye removal, *International Journal of Environmental Science and Technology*, doi <https://doi.org/10.1007/s13762-023-05208-w> (I.F. -3.1) ISSN (P) 1735-1472 ISSN (O) 1735-2630
 7. Rao, A., Dhankhar, B., Deepika, Rinku, Gora, T. & **Bhateria, R.** (2023) Synthesis and Characterization of Zerovalent Iron Nanoparticles using different Routes, *International Journal of Statistics and Reliability Engineering*, 10(S-I): 288-293.
 8. Khatri, A. & **Bhateria, R.** (2023) Efficacy of Nanofertilizers over Chemical Fertilizers in Boosting Agronomic Production, *Nature Environment and Pollution Technology*, 22(2): 767-776.
 9. Mittal, R., Sharma, A., Bhardwaj, A.K., **Bhateria, R.**, Bansal, S., Kashyap, R. & Bhukal, S. (2023) Removal of chromium (VI) using *Spirulina* assisted synthesized mesoporous iron oxide nanoparticles, *Inorganic Chemistry Communications*, 154: 110881.
 10. Panghal, V., **Bhateria, R.**, Kumar, R., Arya, S.S. & Kumar, S. (2023) Assessment of Groundwater and Surface Soil using Multivariate Statistical Techniques and Contamination Indices: A Case Study of Gurugram Millennium City, Haryana, India, *Journal of the Geological Society of India*, 99(3): 430-437. <https://link.springer.com/article/10.1007/s12594-023-2327-8>
 11. Sharma, Y., Kumar, S. & **Bhateria, R.** (2022) Analyzing the Efficiency of DI-FeNPs in Removal of Methyl Orange Dye using Statistical Approach, *Indian Journal of Science and Technology*, 15(21):1032-1040 link- https://www.researchgate.net/publication/361639455_Analyzing_the_Efficiency_of_Di-FeNPs_in_Removal_of_Methyl_Orange_Dye_using_Statistical_Approach
 12. Sharma, Y. & **Bhateria, R.** (2021) Phytoremediation of Iron Nanoparticles for Methyl Orange removal and its optimization studies, *Plant Archives*, 2021, 21(1),939-954 ISSN 0972-5210 LINK- <https://plantarchives.org/article/phytoproduction-of-iron-nanoparticles-for-methyl-orange-removal-and-its-optimization-studies.pdf>
 13. Panghal, V., Sharma, P., Sharma, M. & **Bhateria, R.** (2021) Determining groundwater quality using indices and multivariate statistical techniques: a case study of Tosham block, Haryana, India. *Environmental Geochemistry and Health*, 44(10):5381-3595. (DOI 10.1007/s10653-021-01120-9) ISSN(P) 0269-4042
 14. Singh, R. & **Bhateria, R.** (2020) Optimization and experimental design of the Pb²⁺ adsorption process on a nano-Fe₃O₄-based adsorbent using the response surface methodology. *ACS Omega*. 5(43):28305-28318. ISSN(P) 2470-1343
 15. Singh, R. & **Bhateria, R.** (2020) Experimental and Modeling Process Optimization of Lead Adsorption on Magnetite Nanoparticles via isothermal, kinetics and thermodynamics studies. *ACS Omega*. 5(19):10826-10837. ISSN(P) 2470-1343
 16. Singh, R. & **Bhateria, R.** (2020) Core-shell nanostructures: a simplest two-component system with enhanced properties and multiple applications. *Environmental Geochemistry and Health*. 43(7): 2459-2482 link - <https://pubmed.ncbi.nlm.nih.gov/33161517/>
 17. Panghal, V., & **Bhateria, R.** (2020) A multivariate statistical approach for monitoring of groundwater quality: a case study of Beri block, Haryana, India. *Environmental Geochemistry and Health*. 43(7):2615-2629. Link <https://link.springer.com/article/10.1007/s10653-020-00654-8>
 18. **Bhateria, R.**, Sharma, Y., Bhardwaj, A., Upadhyay, R., Malik, P., Verdodia, P., Saini, A. & Narwal, S. (2019). Synthesis of Silver Nanoparticles Biogenetically using easily accessible weeds. *Annals of Biology*. 35(2): 186-190 (I.F. – 0.04)
 19. **Bhateria, R.**, & Dhaka, R. (2019) Optimization and Statistical Modelling of Cadmium biosorption Process in aqueous medium by *Aspergillus niger* using Response Surface Methodology and Principal

- Component Analysis. *Ecological Engineering*. 135:127-139. (I.F. – 3.406) ISSN(P): 0925-8574 <https://www.sciencedirect.com/science/article/pii/S0925857419301612>
20. **Bhateria, R.,** & Rimmi (2019) A review on Nanotechnological application of magnetic iron oxides for heavy metal removal. *Journal of Water Process Engineering*. 31: 100845 (I.F. – 3.173) ISSN(P):2214-7144 <https://www.sciencedirect.com/science/article/pii/S2214714418307463>
 21. **Bhateria, R.,** & Dhaka, R. (2018). Biosorption of Lead (Pb²⁺) and Cadmium (Cd²⁺) using *Aspergillus niger*: Isotherms, Kinetics and thermodynamics. *Annals of Biology*. 34(2): 260-265 (I.F. – 0.04)
 22. **Bhateria, R.,** & Dhaka, R. (2017). Biological strategies for detoxification of Hexavalent Chromium. *International Journal of Pharma and Bio Sciences*. 8(1):35-48.
 23. **Bhateria, R.,** & Dhaka, R. (2017). Impact of electroplating effluent on growth of *triticum aestivum* and *hordeum vulgare*. *Environmental technology & Innovation*. 8, 389-398. (I.F -2.8)
 24. **Bhateria, R.,** & Snehlata. (2016). Effect of Chromium and Zinc Accumulation on Antioxidant enzymes during Phytoremediation in *Amaranthus viridis* and *Parthenium hysterophorus*. *Indian Journal of Science and Technology*. 9(S1):1-7.
 25. **Bhateria, R.,** & Snehlata (2016): *Phytoremediation of heavy metals- enhanced by EDTA: A Review*. *International Journal of Earth Sciences and Engineering*. 09(04):885-896. [ISSN: 0974-5904, SJR index-0.141, SNIP-0.197]. (I.F. – 0.042)
 26. **Bhateria, R.,** & Jain, D. (2015): Water Quality Assessment of Lake Water: a Review. *Sustainable Water Resources Management*. 2(2):161-173 (Springer) [ISSN: 2363-5037 (print version) ISSN: 2363-5045 (electronic version)]
 27. **Bhateria, R.,** & Snehlata (2015): *Parthenium hysterophorus* L : Harmful and Beneficial aspects – A Review. *Nature Environment and Pollution Technology*. 14(3):463-474. [ISSN: 0972-6268 (Print), ISSN:2395-3454 (online), SJR index-0.138, I.C. value- 5.96]. (NAAS Rating – 4.94)
 28. **Bhateria, R.,** Snehlata and Renu (2015): Impact of Industrial Effluent on crops and soil properties: A Review. *Indian Journal of Environmental Protection*. 35(7):591-609.
 29. **Bhateria, R.,** & Amir Abdullah (2015): Analyzing uncertainties in lake water: A review. *International Journal of Environmental Sciences*. 5(6): 155-168. (I.C. value- 6.29) (ISSN No. 0976 – 4402).
 30. **Bhateria, R.,** & Renu Dhaka (2015): Algae as Biofuel. *Journal of Biofuel*. 5(6):607-631. Taylor and Francis ISSN:1759-7269E-ISSN:1759-7277 (I.F. – 1.130)
 31. **Bhateria, R.,** & Rajesh Dhankhar (2014): Response surface methodology for biotransformation of Cr(VI) using *Salmonella sp. S4*. *International Journal of Pharma and Bio Sciences*. 5(4): (B) 307-319. (Impact factor – 2.958, I.C. value – 4.63) (ISSN – 0975-6299)
 32. **Bhateria, R.,** & Snehlata (2013): Role of Rhizospheric bacteria in phytoremediation of heavy metal contaminated soil. *International Journal of Current Research*. 5(12): 3897-3907. (Impact factor - 1.125, I.C. value- 6.29)
 33. **Bhateria, R.,** & Rajesh Dhankhar (2013): Optimization of Cr(VI) biotransformation by response surface methodology using *Microbacterium maritopicum*. *International Journal of Pharma and Bio Sciences*. 4(4): (B) 834-844. (Impact factor – 2.958, I.C. value – 4.63) (ISSN – 0975-6299)
 34. Anju Hooda, Rajesh Dhankhar and **Rachna Bhateria** (2013): Sequestration of Uranium (VI) from aqueous solutions using Brewery yeast (*Saccharomyces cerevisiae*). *International Journal of Current Research*. 5(3): 704-710. (Impact factor -1.125, I.C. value- 6.29)
 35. **Rachna Bhateria** and Rajesh Dhankhar (2013): Statistical modelling and optimization of Cr(VI) Biotransformation by indigenous bacterial strains using response surface methodology. *International Journal of Current Research*. 5(2): 303-312. (Impact factor -1.125, I.C. value- 6.29)
 36. Rajesh Dhankhar and **Rachna Bhateria Guriyan** (2011): Bacterial Biosorbents for detoxification of heavy metals from aqueous solution. *International Journal of Advances in Science and Technology*. 2(6): 103-128. (ISSN No. 2229-5216)
 37. Rajesh Dhankhar and **Rachna Bhateria Guriyan** (2011): Bioremediation strategies for management of metal contaminated soil. *International Journal of Environmental Sciences*. 1(7): 1884-1898. (I.C. value- 6.29) (ISSN No. 0976 – 4402)

b) Published in Conferences/Seminar Proceedings:

1. **Rachna Bhatelia** and Snehlata (2018): Tolerance Potential of *Amaranthus viridis* L. in chromium contaminated soil in “Environmental and Ecological Sustainability” Paper No. – 27, pp. 220-225 by Indra Gandhi National Open University, New Delhi India ISBN- 978-93-87960-94-7
2. Poonam Narwal and **Rachna Bhatelia** (2015) Untrapping the hidden potential of Wetlands: A Review in Proceeding of National Seminar on Innovative Researches in Life Sciences held on February 21, 2015 organized by Department of Zoology, M.D.U. Rohtak, pp 83-94. (ISBN: 978-81-920945-5-7)
3. **Rachna Bhatelia** and Rajesh Dhankhar (2012) Bacteria: A novel organism for chromium biosorption in National Seminar on Challenges in combating diseases: Cause to Cure held on 23 March, 2012 organized by Department of Zoology, M.D. University, Rohtak, pp 16-19.
4. **Rachna Bhatelia**, Meenakshi Karwal and M. Bishnoi (2010) Characterization of Heavy Metals in Preserved and Fresh vegetables using Atomic Absorption Spectroscopy in National Conference on Environmental and Health Issues: In a changing climatic scenario held from 14-15 October, 2010 in Department of Environmental Sciences, M.D. University, Rohtak, pp 119-124.
5. **Rachna**, R.Dhankhar, Poonam, Anju and Radha (2010) Heavy Metals exposure from Vegetables- A Review in National Conference on Environmental Challenges: Sustainable Development held from 29-30 March, 2010 in Department of Environmental Sciences, M.D.University, Rohtak, pp 377-382.
6. **Rachna** and R. Dhankhar (2010) Bioenergy- A sustainable approach in National Seminar on Computing Life: Raw to Refined held on 27 March, 2010 organized by Department of Zoology, M.D.University, Rohtak, pp 16-19.
7. R. Dhankhar, Anju Hooda, Poonam, Radha, **Rachna**, Hemlata (2010) *Saccharomyces cerevisiae*: an ecofriendly alternative for heavy metal removal in National Seminar on Computing Life: Raw to Refined held on 27 March, 2010 organized by Department of Zoology, M.D.University, Rohtak, pp 134-139.
8. **Rachna**, M. Bishnoi, R. Solanki, Anju and Punam (2010) Comparison of Heavy Metals in packed and fresh vegetables in National Conference on Environmental Degradation: Effects, Challenges and Remedies held from 25-27 February, 2010 in Jan Nayak Ch. Lal Memorial College of Engineering, Sirsa, pp 110-112.
9. Anju Hooda, Poonam, Radha, **Rachna**, S.Chhikara, Hemlata and R. Dhankhar (2010) Development of Efficient Biosorbent by using non-immobilized *A. niger* Biomass for sequestration of Cr(VI) ions in National Conference on Environmental Degradation: Effects, Challenges and Remedies held from 25-27 February, 2010 in Jan Nayak Ch. Lal Memorial College of Engineering, Sirsa, pp 5-7.
10. **Rachna** and Rajesh Dhankhar (2010) Biotransformation: A Biological tool for detoxification of chromium, presented at State Level one day conference on Applications and special effects of advanced tools and Techniques in Current Zoology, held on 23rd Jan, 2010, pp. 27-33.

IV Book/Book Chapters Published

1. Chapter Title: Microalgae: A Novel biosorbent for detoxification of Heavy metals in “Microalgae: Windows of Opportunity” Paper ID; PA/PM/2015/11. By SBW Publishers, New Delhi, India ISBN-10: 8185708649 ISBN-13: 978-8185708645
2. Mona S., **Bhatelia R.**, Deepak B., Kiran B., Nisha R. (2019) Biochar for Reclamation of Saline Soils. In: Giri B., Varma A. (eds) Microorganisms in Saline Environments: Strategies and Functions. Soil Biology, vol 56. Springer, Cham.
3. Chapter Title: **Industrial Safety legislation** in MEVE-004 “Industrial Risk Assessment and Safety Acts” February, 2019 published for Post Graduate Diploma in Environmental and Occupational Health Program Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 978-93-88980-10-4.
4. Chapter Title: **Environmental Appraisal** in MEVE-001 “Introduction to Environmental Impact Assessment” February, 2019 published for Post Graduate Diploma in Environmental and Occupational Health Program Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 978-93-88980-00-5.
5. Chapter Title: **Introduction to Environmental Impact Assessment** in MEVE-001 “Environmental Impact Assessment for Environmental Health” February, 2019 published for Post Graduate Diploma in Environmental and Occupational Health Program Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 987-93-88980-00-5.
6. Chapter Title: **Noise Impact Analysis** in MEVE-001 “Noise, Energy and Vegetation Impact Analysis” February, 2019 published for Post Graduate Diploma in Environmental and Occupational Health Program Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 978-93-88980-02-9.

7. Chapter Title: **Energy Impact Analysis** in MEVE-001 “Noise, Energy and Vegetation Impact Analysis” February, 2019 published for Post Graduate Diploma in Environmental and Occupational Health Program Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 978-93-88980-02-9.
8. Chapter Title: **Meteorology** in MEVE-001 “Climatology and Meteorology”, 2021 published for Master of Science (MSCENV) Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 978-93-90773-70-1.
9. Chapter Title: **Classification of Industries** in MEV-016 “EIA Reporting”, 2021 published for Master of Science (MSCENV) Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 978-93-55680-45-7.
10. Chapter Title: **Description of Environmental Setting** in MEV-016 “EIA Reporting”, 2021 published for Master of Science (MSCENV) Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 978-93-55680-45-7.
11. Chapter Title: **Decision Making in EIA** in MEV-016 “EIA Reporting”, 2021 published for Master of Science (MSCENV) Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 978-93-55680-45-7.
12. Chapter Title: **Man-made Hazards** in MEV-012 “Natural Hazards”, 2021 published for Master of Science (MSCENV) Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 978-93-90773-70-1
13. Chapter Title: **EIA Procedure** in MEV-016 “Concept of EIA”, 2021 published for Master of Science (MSCENV) Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 978-93-55680-45-7
14. Chapter Title: **Assessment of EIA** in MEV-016 “Concept of EIA”, 2021 published for Master of Science (MSCENV) Published by Registrar, MPDD, IGNOU, New Delhi ISBN: 978-93-55680-45-7
15. Chapter Title: **Microscopy** in MEVE-018 “Instrumentation techniques for Environmental Monitoring”, Block-3 Microbial and Molecular Biology method, 2021 published for Master of Science (MSCENV) Published by Registrar, MPDD, IGNOU, New Delhi ISBN:
16. Chapter Title: **Immunoassays** in MEVE-018 “Instrumentation techniques for Environmental Monitoring”, Block-3 Microbial and Molecular Biology method, 2021 published for Master of Science (MSCENV) Published by Registrar, MPDD, IGNOU, New Delhi ISBN:
17. Yogita Sharma and **Rachna Bhatelia** (2021) Green synthesized iron nanoparticles for Environmental Management: Minimizing Material and Energy Inputs, The Handbook of Environmental Chemistry, Springer Nature Switzerland (Electronic ISBN 1616-864X Print ISBN 1867-979X)
18. **Rachna Bhatelia** and Rimmy Singh (2022) Nanotechnology enabled multifunctional materials for removal of toxicants from wastewater. In: The Handbook of Environmental Chemistry, Springer Nature Switzerland (Electronic ISBN 1616-864X Print ISBN 1867-979X)
19. **Rimmy Singh**, Sunil Kumar and Rachna Bhatelia (2022) Recent Trends in Synthesis and applicability of GO-based Nanomaterials in Environmental Remediation. In: Rai, J.P.N., Saraswat, S. (eds) Nano-biotechnology for Waste Water Treatment. Water Science and Technology Library, vol 111. Springer, Cham. https://doi.org/10.1007/978-3-031-00812-2_6 (Print ISBN 978-3-031-00811-5, Electronic ISBN 978-3-031-00812-2)
20. **Bhatelia, R.**, Rimmy, Yogita, Kumar, S. (2022). Role of Plant–Microbe Interactions in Combating Salinity Stress. In: Vaishnav, A., Arya, S., Choudhary, D.K. (eds) Plant Stress Mitigators. Springer, Singapore. https://doi.org/10.1007/978-981-16-7759-5_13 (Print ISBN 978-981-16-7758-8, Online ISBN 978-981-16-7759-5)
21. Sharma, Y., **Bhatelia, R.** (2022). Alleviating Abiotic Stress in Plants Using Nanoparticles. In: Vaishnav, A., Arya, S., Choudhary, D.K. (eds) Plant Stress Mitigators. Springer, Singapore. https://doi.org/10.1007/978-981-16-7759-5_25 (Print ISBN978-981-16-7758-8, Online ISBN978-981-16-7759-5)
22. Sharma, M., Kumar, S., Diwan, H.D., Bansal, D., **Bhatelia, R.** (2023)Manufacturing Industry Towards Carbon Footprint Reduction and Environmental Sustainability. In **Integrated Waste Management: The Circular Academy**, Cambridge Scholars Publishing. (ISBN 978-1-5275-9461-6).
23. Yadav, A., Kumar, S., Deepak, B., **Bhatelia, R.**, Mona, S. (2024) Algae Based Bioelectrochemical Systems for Carbon Sequestration, Carbon Storage, Bioremediation and Bioproduct Generation Bioelectrochemical Systems: The way forward. Academic Press Inc, Elsevier ISBN No 978-0323910231
24. Sujata, Anuj Sharma, Bansal Deepak, Rachna Bhatelia, Sharma Mona (2024) Chapter title- Algal Nanoparticles as a Green Approach for Bioremediation of Heavy Metals from Wastewater in “Solid Waste Management: Challenges and Recent Solutions” pp. 261 – 275 (1st ed.). CRC Press. eBook ISBN9781003543176
25. Kumari, A., Yadav, M., Bhatelia, R. (2025) Chapter title- Analytical and detection techniques for microplastics in “Microplastic Pollution: Occurrence, Health Risk and Challenges”, pp. 147-166 (1st ed.). CRC Press. eBook ISBN 9781032706573. <https://doi.org/10.1201/9781032706573>

V Participation in Conferences/Seminars

1. Participated and presented paper entitled “ Synthesis of Zerovalent iron nanoparticles using biological and chemical methods” in 2nd National ENO's Conference on "Indian Knowledge System for Environmental Sustainability, Climate Action and Eco-Human Health" organized by the Department of Environment Studies, Panjab University, Chandigarh, in collaboration with Paryavaran Sanrakshan Gatividhi (PSG) and National Institute of Technical Teachers Training and Research (NITTR), Chandigarh on 20-21st September, 2024 at Panjab University, Chandigarh.
2. Participated and presented paper entitled “A groundwater quality assessment of Sampla block, Rohtak District, Haryana, India” in 2nd International Conference of Indian Science Congress Association-Rohtak Chapter on Science & Technology for Sustainable Future held on 7-8 Feb 2024 organised by UIET, M.D.U., Rohtak
3. Participated and presented paper entitled “Removal of lead ions (Pb²⁺) from aqueous solution using Zinc Oxide nanoparticles in International Seminar on Sustainable Development and Global Issues held on 7 Oct 2023 organized by UGC- HRDC, Bhagat Phool Singh Mahila Vishwavidyalaya, Khanpur Kalan, Sonapat, Haryana.
4. Participated and presented paper entitled “Assessment of Groundwater Quality of Beri Block (Jhajjar) Haryana” in National Conference on Recent Trends in Materials and Life Sciences (RTMLS-2023) held on 29 September 2023 organized by Department of Chemistry, M.D.U., Rohtak.
5. Participated in Two Day Workshop on “Subject Specific Benchmarking of Learning Outcomes: Outcome based Education” held on 27-28 September, 2023 organised by Faculty Development Centre & Internal Quality Assurance Cell, M.D.U., Rohtak.
6. Participated in the National Seminar on “Future Universities” on Internal Quality Assurance Cell & Dean Students’ Welfare, M.D.U., Rohtak. (26 Sept 2023)
7. Participated and presented paper entitled “Effect of synthesized zinc oxide nanoparticles on the germination of Chickpea seeds” in National Conference on IPR in University System organized by Centre of IPR Studies held on 3 June 2023 in Collaboration with Department of Zoology, M.D. University, Rohtak.
8. Participated and presented paper entitled “Fate and removal of microplastics from Industrial wastewater” in Two-days International Conference on Nature and Natural Sciences(ICNS-2023) Theme New Vistas in Green Technology and Socioeconomic Sustainability held on 5-6 May, 2023 organised by Rani Durgavati University, Jabalpur (M.P.), India.
9. Participated and presented paper entitled “Synthesis of zerovalent iron nanoparticles via chemical and green methods: A comparative approach” in Two-days International Conference on Innovations and Technology transforming Pharmaceutical Education and Research held on 25-26 April, 2023 organised by Department of Pharmaceutical Sciences, M.D. University, Rohtak.
10. Participated in One day workshop on Curriculum and Credit Framework for Undergraduate Programmes held on 8 April 2023 organized by Faculty Development Centre & Internal Quality Assurance Cell, M.D.U., Rohtak.
11. Participated in One day workshop on Basic Contours of NEP 2020 held on 9 January, 2023 organized by Internal Quality Assurance Cell, M.D.U., Rohtak under the aegis of IDP Committee.
12. Participated and presented paper entitled “Effect of synthesized zinc oxide nanoparticles on the germination of Okra and mungbean” in National Conference on Emerging Trends in Engineering, Science and Management- 2022 held on 26-27 December, 2022 organized by Department of Electrical Engineering, University Institute of Engineering and Technology, M.D.U., Rohtak.
13. Participated in One day workshop on Extramural Research Funding: Opportunities and Challenges held on 14-15 October 2022 organised under UGC-STRIDE Programme Component-I sponsored by UGC, New Delhi.
14. Participated and presented paper entitled “Impact of COVID-19 on Air Quality: A Review” in International Conference on Integrated approach in Science and Technology for Sustainable future held on 28 February- 1st March, 2022 organised by J.C. Bose of Science & Technology, YMCA, Faridabad.
15. Participated in Online Seminar on “ Biosafety Guidelines & Regulations in Laboratories” held on 28 January 2022 organised by CCPC and Office of Director Research, M.D.U., Rohtak
16. Participated and presented paper entitled “Swachh Bharat Abhiyan: A key to sustainable development” in National Seminar on Teacher Education in India: Concerns, Reforms and Regulatory Changes in context of

- different education policies held on 24-25 December, 2021 organized by Saini Institute of Girls Education Rohtak.
17. Participated and presented paper entitled "Implications of COVID-19 on Environment" in Two-days Interdisciplinary National Seminar (online) on Post COVID-19 Strategies; A Stronger and Resilient Tomorrow held on 25-26 November, 2021 organised by Faculty Development Centre, Maharshi Dayanand University, Rohtak.
 18. Participated and presented paper entitled "Protein profiling of bacterial strains under chromium stress" in National Conference on Recent Advancements in Protein Bioinformatics held on 24 Feb, 2020 organized by Centre for Bioinformatics, Maharshi Dayanand University, Rohtak.
 19. Participated and completed one week Workshop on "E-Learning Technologies and Pedagogical Innovations" from Jan 20, 2019 to Jan 25, 2020 organized by UGC-HRDC, GJUS&T, Hisar
 20. Participated and presented paper entitled "Phytogenic synthesis of silver nanoparticles using weeds" in International Conference- 2019 (CTM-2019), Current Trends In Microbiology and Microbiome Research: A Global Perspective held on 11-12 October, 2019 organized by Department of Microbiology, M.D. University, Rohtak.
 21. Participated in Capacity Building workshop for "Enhancing Female Entrepreneurship in India" under the aegis of Erasmus+ Programme of European Union held on 11 October, 2019 organized by Department of Microbiology, M.D. University, Rohtak.
 22. Participated and presented paper on "Statistical Modelling of Lead Biosorption Process in aqueous medium by *Aspergillus niger* using Response Surface Methodology" in 35th SEGH International Conference on Sustainable Geochemistry held at Manchester Metropolitan University, Business School from 1-5 July, 2019.
 23. Participated and presented paper on "Chemical reduction of iron to form zerovalent nanoparticles" in National Seminar on "Frontiers in Life Sciences- An Interdisciplinary Perspective" held on 15 March, 2019 organized by Department of Zoology, M.D. University, Rohtak.
 24. Participated and completed Seven Days Workshop on "E-Learning Technologies, E-Content Development and MOOCs" from Feb 20, 2019 to Feb 26, 2019 organized by Faculty Development Centre, M.D.U., Rohtak.
 25. Participated in National Workshop on "Intellectual Property Rights: Protection, Ownership and Innovation" held on 15 December, 2018 organized by Department of Education, M.D.U., Rohtak
 26. Participated and presented paper entitled "Biosorption of Lead (Pb²⁺) ions by *Aspergillus niger*: Isotherms, Kinetics and Thermodynamics" in International Conference on Microbes for Biotechnological Innovations (MBI-2018) held on 7th December, 2018 organized by Department of Microbiology, M.D. University, Rohtak in Association of Microbiologists of India-Rohtak Unit, M.D.U., Rohtak.
 27. Participated in National Workshop on "Bioethics in Research: A need or compulsion" held on 15 November, 2018 organized by Department of Genetics, M.D. University, Rohtak.
 28. Participated in National Workshop on "Intellectual Property Rights Protection" held on 3 November, 2018 organized by Department of Genetics, M.D. University, Rohtak.
 29. Participated and presented paper entitled "Tolerance potential of *Amaranthus viridis* L. in chromium contaminated soil" in International Conference on Environmental and Ecological Sustainability: Engaging the Stakeholders held on 4th -5th October, 2018 organised by School of Interdisciplinary and Trans-disciplinary Studies Indra Gandhi National Open University, New Delhi
 30. Participated and presented paper entitled "Cellular toxicology due to silver nanoparticles" in National Conference on Recent Advancements in Bioinformatics cum Workshop on Protein Bioinformatics held on 16th – 17th March, 2018 organised by Bioinformatics Infrastructural Facility, Centre for Bioinformatics, Maharshi Dayanand University, Rohtak.
 31. Participated and Presented paper entitled "Effect of Lead on the growth of *Parthenium hysterophorous* L." in International Conference on Sustainable Agriculture, Energy, Environment and Technology (ICSAEET-2018) held on 24-25 february, 2018 organized by Environmental Sustainability Management Cell, Maharshi Dayanand University, Rohtak.
 32. Participated in National Conference-cum-Workshop on "Emerging Infectious Diseases" held on 29 November, 2017 organized by Centre for Biotechnology, M.D. University, Rohtak.
 33. Participated and presented paper entitled "Application of Response Surface Methodolgy (RSM) for Optimization of Cadmium (Cd²⁺) biosorption by *Aspergillus niger* in Industrial Effluent" in International Conference on Microbes for Health and Wealth held on 14th November, 2017 organized by Department of Microbiology, M.D. University, Rohtak in Association of Microbiologists of India-Rohtak Unit, M.D.U., Rohtak.

34. Participated and Chaired a Technical Session in a Two Days Interdisciplinary International Conference on “Role of Digitalization in Sustainable Development : A Global Perspective” held on 16- 17 September, 2017 organized by Department of Education, Maharshi Dayanand University, Rohtak.
35. Participated and presented paper entitled “Role of Forensics in Wildlife Protection” in National Seminar on Current Scenario in Wildlife Protection held on 7 September, 2017 organized by Department of Genetics, M.D. University, Rohtak.
36. Participated and presented paper on “Nanomaterials for Environmental Remediation” in National Seminar on “Biodiversity: Status and Significance” held on 21 March, 2017 organized by Department of Botany, M.D.U., Rohtak.
37. Participated in workshop on “Coping Health Issues” on 23 February, 2017 organized by Women Study Centre, Maharshi Dayanand University, Rohtak.
38. Participated and presented paper entitled “Remediation of chromium contaminated soil using *Amaranthus viridis*” in International Conference on “Emerging trends on Environmental Science and engineering” held from 16-18 February, 2017 organized by Environmental Sciences and Engineering” held in G.J.U.S & T, Hisar.
39. Participated in “One day Author workshop” conducted by Vivekanand Library on 18 November, 2016 in association with Elsevier, Maharshi Dayanand University, Rohtak.
40. Participated in one week Faculty Development Programme on “Environmental Pollution: Monitoring and control” (EPMC-2016) held from 24-28 October, 2016 organized by Department of Environmental Engineering, Delhi Technological University, Delhi.
41. Participated and presented paper entitled “Phytoremediation potential and antioxidant response in *Parthenium hysterophorus*” in one day National Conference on Genetic Diversity and Therapeutic Potential of Natural Products held on 17 September, 2016 organized by Department of Genetics, M.D. University, Rohtak.
42. Participated in one day workshop on “Save Ozone Layer: Protect Life” on 16 September, 2016 organized by Department of Environmental Sciences, Maharshi Dayanand University, Rohtak.
43. Participated and presented paper entitled Mechanism of Cr(VI) Biotransformation in Plants in National seminar on Today’s Vision: Save Ozone, Save Earth organised by Department of Environment Science, MD University, Rohtak held on 16th September, 2015.
44. Participated in one day workshop on “Skill Education and Choice Based Credit System (CBCS)” on 31 March, 2016 organized by Maharshi Dayanand University, Rohtak sponsored by RUSA, Department of Higher Education, Government of Haryana.
45. Participated and presented paper entitled “Biotransformation of Cr (VI) by *Micobacterium maritypicum* – isolation, optimisation and industrial applicability” in International Conference on “Sustainable Ecosystem and Environment” held from 18-21 November, 2015 organized by International Council for Health and Environment (ICHE) in collaboration with Action for Sustainable Efficacious development and Awareness (ASEA) in Dubai.
46. Participated and presented paper entitled “Green technology for detoxifying heavy metals from polluted soil” in National Conference on “Therapeutic Potential of Natural Products: Current Innovations and Future Trends” held on 19 March, 2015 organized by Department of Genetics, M.D. University, Rohtak.
47. Participated in “Author Workshop” on 25 February, 2015 organized by Springer and Maharshi Dayanand University.
48. Participated and presented paper on “Mechanism of Cr(VI) Biotransformation in microbes and Plants” in National Seminar on “Innovative Researches in Life Sciences” held on 21 February, 2015 organized by Department of Zoology, M.D. University, Rohtak.
49. Participated in 3rd International Research Colloquium on “Interdisciplinary Scope of Microbiology: Present Status and Future Directions (IRCISM-2015)” held on 31 January, 2015 organized by Department of Microbiology, M.D. University, Rohtak in Association of Microbiologists of India-Rohtak Unit, M.D.U., Rohtak.
50. Participated in National Seminar on “Convergence of Biotechnology and Engineering for Industry (CBEI-2014)” held on 26 November, 2014 organized by Department of Biotechnology, University Institute of Engg. and Technology, M.D. University, Rohtak.
51. Participated in University Level Workshop on “Disaster Management” held on 19 November, 2014 organized by Youth Red Cross, M.D. University, Rohtak.
52. Participated in one day National Seminar on Molecular Pathology of Human Genetic Diseases held on 23 August, 2014 organized by Department of Genetics, M.D. University, Rohtak.

53. Participated and presented paper entitled "Algae as a fuel" in National Conference on "Pollution Mitigation for a Sustainable Future" held on 26 March, 2014 organized by Department of Environmental Sciences, M.D. University, Rohtak.
54. Participated and presented paper entitled "Potential of molecular markers in crop improvement" in National Workshop on "Genomics in Crop Improvement" held from 27-28 February, 2014 organized by Centre for Biotechnology, M.D.U., Rohtak.
55. Participated and presented paper entitled "Reduction of hexavalent chromium bacterial strains isolated from soil contaminated with textile effluent" in International symposium on "Frontiers Discoveries and Innovations in Microbiology and its Interdisciplinary Relevance (FDMIR-2013)" held from 17-20 November, 2013 organized by Association of Microbiologists (AMI) of India-Rohtak Unit, M.D.U., Rohtak.
56. Participated as a resource person in Workshop on "Techniques in monitoring environmental pollution" held from 25th- 26th October, 2013 organized by Department of Environmental Sciences, M.D.U., Rohtak.
57. Participated in National Seminar on "Novel Antimicrobial: An Alternative to Clinical Antibiotics" held on 14 September, 2013 organized by Department of Genetics, M.D. University, Rohtak.
58. Participated and presented paper on "Biosorption of Hexavalent chromium using groundnut husk" in National Seminar on "Promising Trends in Science Galaxy" held on 20 March, 2013 organized by Department of Zoology, M.D. University, Rohtak.
59. Participated and presented paper on "Use of bacterial enzymes for improving the health of environment" in International Geographical Union (IGU) Conference held from 14-16 March, 2013 on Geoinformatics for biodiversity and climate change organized by Department of Geography, M.D. University, Rohtak.
60. Participated in one day International Research Colloquium on "Advances in Microbial Biotechnology: Future Prospects" held on 20 November, 2012 organized by Department of Microbiology, M.D. University, Rohtak in Association of Microbiologists of India-Rohtak Unit, M.D.U., Rohtak.
61. Participated in National Workshop on Microbial Diversity: Exploration and Perspectives held from 3rd May to 12th May, 2012 organized by Department of Environmental Sciences, M.D.U., Rohtak.
62. Participated in 2nd National Seminar on "Microbes in Human Welfare" held on 24 March, 2012 organized by Department of Microbiology, M.D. University, Rohtak in Association of Microbiologists of India-Rohtak Unit, M.D.U., Rohtak.
63. Participated and presented paper on "Bacteria: a novel organism for chromium biosorption" in National Seminar on Challenges in Combating Diseases: Cause to Cure held on 23 March, 2012 organized by Department of Zoology, M.D.U., Rohtak.
64. Participated in National Seminar on Recent Advancements in application of Genetics held on 20 March, 2012 organized by Department of Genetics, M.D. University, Rohtak.
65. Participated in National Workshop on Current Perspectives in Advance Material Science held from 8-9 February, 2012 in Pt. Neki Ram Sharma Government College, Rohtak.
66. Participated and presented paper on "Bioremediation of metal contaminated soil" in 6th National Conference on Thermodynamics of Chemical and Biological Systems NCTCBS-2011 held on 2-4 November, 2011 in Department of Chemistry, M.D.U., Rohtak.
67. Participated in 1st National Seminar on "Microbes and Resource Management" held on 22nd October, 2011 organized by Association of Microbiologists of India-Rohtak Unit, M.D.U., Rohtak.
68. Participated in Seminar on Intellectual Property- Creation and Protection held on 23rd April, 2011 organized by Department of Microbiology, M.D.U., Rohtak.
69. Participated and presented paper on "Ocean acidification" in National Seminar on Internet: Applications in Research held on 26 March, 2011 in Department of Zoology, M.D.U., Rohtak.
70. Participated and presented paper on "Biotransformation of Chromium (VI)" in National conference on Multidisciplinary Approach in Frontier areas of Environmental Sciences and Engineering" held in G.J.U.S & T, Hisar from 4-5 March, 2011.
71. Participated and presented paper on "Bacteria: A novel organism for chromium biosorption" in National Conference on "Biodiversity: Challenges and opportunities" held in Department of Botany, M.D.U., Rohtak on Feb 18-19, 2011.
72. Participated in India- Japan Seminar on "Nanomaterials for Diagnostic and therapeutics" held in Department of Biochemistry, M.D.U., Rohtak on Oct. 30, 2010.
73. Participated and presented paper on "Characterization of Heavy Metals in Preserved and Fresh vegetables uses Atomic Absorption Spectroscopy" in National Conference on Environmental and Health Issues: In a

changing climatic scenario held from 14-15 October, 2010 in Department of Environmental Sciences, M.D. University, Rohtak.

74. Participated and presented paper on “Heavy Metals exposure from Vegetables- A Review” in National Conference on Environmental Challenges: Sustainable Development held from 29-30 March, 2010 in Department of Environmental Sciences, M.D. University, Rohtak.
75. Participated and presented paper on “Bioenergy- A sustainable approach” in National Seminar on Computing Life: Raw to Refined held on 27 March, 2010 organized by Department of Zoology, M.D. University, Rohtak.
76. Participated in one day National Workshop on “Environmental Problems and its mitigation” held on 26 March, 2010 organized by Department Environmental Sciences, M.D. University, Rohtak.
77. Participated and presented paper on “Comparison of Heavy Metals in packed and fresh vegetables” in National Conference on Environmental Degradation: Effects, Challenges and Remedies held from 25-27 February, 2010 in Jan Nayak Ch. Lal Memorial College of Engineering, Sirsa.
78. Participated and presented paper presented on “Biotransformation: A Biological tool for detoxification of chromium”, in State Level one day conference on Applications and special effects of advanced tools and Techniques in Current Zoology, held on 23rd Jan, 2010 in Hindu Girls College, Sonapat.
79. Presented Poster in the Zonal Seminar on “Abiotic Stress Tolerance in Plants-Physiological and Molecular Approaches” organized by Centre for Plant Biotechnology, Hisar on 5 December, 2009.
80. Participated in National Seminar on “Biodiversity : concerns and Solutions” held on 20 November, 2009 organized by Department of Botany, M.D. University, Rohtak.
81. Participated and presented Poster in UGC Sponsored National Seminar on “Environment and Sustainable Development” from 3-4 November, 2009 organized by Department of Botanical and Environmental Sciences, Guru Nanak Dev University, Amritsar.

VI. Membership/Fellowship of Professional/ Academic bodies, Societies etc.

- Life member of the Society for Science of Climate Change and sustainable environment (SSCE).
- Life member of Association of Microbiologists (AMI) of India.
- Member, American Chemical Society(ACS)

VII Conference and workshops Organised

- Organising Secretary in National Conference on “Science and Technology for Sustainable future” organised by Department of Environmental Science, M.D.U., Rohtak from 28 Feb, 2023 sponsored by Haryana State Council for Science Innovation and Technology, Govt of Haryana.
- Organising Secretary in One Week Workshop on Research Methodology (for research scholars) organised by Faculty of Life Sciences In Collaboration with Faculty of Pharmaceutical Sciences, Department of Forensic Science and Ch. Ranbir Singh Institute of Social and Economic Change & from April 25-29, 2022.
- Organising Secretary in National Conference on “Global Climate Change: Concerns & Solutions” (GCCCS-2019) organised by Environmental Sustainability Management Cell, M.D.U., Rohtak from Feb 15-16, 2019.
- Member of Organising Committee in International Conference on Sustainable Agriculture, Energy, Environment and Technology (ICSAEET-2018) held on 24-25 february, 2018 organized by Environmental Sustainability Management Cell, Maharshi Dayanand University, Rohtak.
- Organising Secretary in National Seminar on Today’s vision: Save Ozone, Save Earth held on September 16, 2015 organised by Department of Environmental Science, Maharshi Dayanand University, Rohtak.
- Member of Organising Committee in 2-days National Conference Cum Workshop on Molecular Modelling and Drug Design (MMDD-2015) held during 20-21 March, 2015 organised by Bioinformatics Infrastructural Facility, Maharshi Dayanand University, Rohtak.

VIII. Development of e-content

S.No.	Name of the Module	Platform on which module is developed	Date of Publication on website	URL/ Link of the content

1	Mineralogy- Minerals, types	e-PG Pathshala	22 Jan 2019	https://epgp.inflibnet.ac.in/view_s.php?category=274
2	Taj Mahal Protection from limestone leprosy	SWAYAM	6 feb 2019	https://www.youtube.com/watch?v=bxTJoXCH2pk&t=49s
3	Social Forestry in India	SWAYAM	6 feb 2019	https://www.youtube.com/watch?v=MUkFlwCXdGo&t=18s
4	River Shrinking	SWAYAM	6 feb 2019	https://www.youtube.com/watch?v=atuH8pJaXPA

IX. Outreach Activity

Coordinator in conducting International Earth Science Olympiad 2018 and 2019

X. Administrative Assignment

- Environmental Nodal Officer, M.D.U., Rohtak
- Deputy Coordinator, NAAC Criteria-7, M.D.U., Rohtak
- Member Outreach Programme Committee for formulation of Environmental Sustainable Goals and related areas
- Counsellor of Youth Red Cross, Maharshi Dayanand University, Rohtak from 9 Sept, 2015 to July, 2018.
- Member, PG Board of studies in Environmental Sciences, Maharshi Dayanand University, Rohtak

XI. Participation as Resource Person/ Invited speaker in Workshop/ Seminars/ Refresher Course etc.

- Keynote Speaker in International webinar on Biodiversity in India: Implementation and Barriers of Regulatory Acts organized by Zoology Department & NSS Unit of Paliwal PG College Shikohabad , Firozabad (U.P.) India on 22 September 2024.
- Resource person in One week Workshop on Disaster Management held from May 1-7, 2023 organized by NSS Cell, M.D.U., Rohtak (Topic-Risk Assessment and Management)
- Resource person in UGC Sponsored two-week online interdisciplinary Refresher Course on Environmental Sciences (21-02-2022 to 05-03-2022) organized by UGC-HRDC, GJUS&T, Hisar.
- Resource person in UGC Sponsored one-month online Faculty Induction Programme-1 Course (21/09/2020 to 24/10/2020) organized by UGC-HRDC, GJUS&T, Hisar
- Resource person in Workshop on Ethics & Values in Public Governance for Elementary School Head Masters & HREDA Officers conducted by Haryana Institute of Public Administration (DTC-Panchkula) w.e.f. 27/08/2022 to 28/08/2022. (Topic-The Giving Model of Inspiration- The Rina Theory, What can I do for my environment)
- Delivered Extension lecture under Nature Interpretation Cell at PG Government College of Women, Rohtak on 23/11/2021 and 25/11/2022 (Topic- Impacts of Air Pollutants and Managing Particulate matter & Smog).

- Resource person in 7 days NSS Camp organized by Baba Mastnath University, Rohtak, Haryana on 12/03/2022 and 01/03/2023 (Topic- Water Conservation)
- Resource person in 7 days NSS Camp organized by PG Government College of Women, Rohtak on 16/02/2021.
- Invited as **Guest of Honor** at US Gala Program Launch 2022 Sampla, Rohtak organised by Magic Bus India Foundation on and 22/10/2022.
- Invited as **Keynote Speaker** on the occasion of World Environment Day 5-6 June, 2022 organised by Department of Zoology, CBLU, Bhiwani.
- Delivered lecture as Speaker in Webinar on “Applications of Nanotechnology in Waste Water Treatment: An overview” organized by KADAM Association and SGT University, Gurugram on 14/12/2020.

XII. Chaired Technical Sessions in

- One Week National Workshop on Bioperspecting Natural Products for Human Health and Socio-Economic Developments held on 9-14 January, 2023 organised under UGC-STRIDE Programme Component- I sponsored by UGC, New Delhi.
- National Seminar (Online) "Rural Development: Opportunities and Challenges" organised by the Department of Economics, Maharshi Dayanand University, Rohtak on 26 March, 2021.
- One Week National Workshop on “Research methodology in Life Sciences” organized by Ch. Ranbir Singh Institute of Special and Economic Change and Faculty of Life Sciences from April 1st to April 5th 2021.

XIII. Supervision & Mentoring

- Ph.D – 4 (awarded), 7 (continuing)